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Dual-component, alkaline developable
Liquid photo imageable solder mask

PSR-2000 FR603W6/ CA-25 FR604

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Data Sheet No.:DAS-035195/037187-00

1. FEATURES:

PSR-2000 FR603W6 / CA-25 FR604 is a liquid photo imageable solder resist ink (alkaline development type) used for screen printing.

a) White color.
b) Excellent Discoloration resistance.

2. SPECIFICATINS:

Product name	Main agent	: PSR-2000 FR603W6
	Hardener	: CA-25 FR604
UL Suffix	Main agent	: PSR-2000CI
	Hardener	: CA-25CI
Color	Main agent	: White
	Hardener	: White
Mixing ratio	Main agent：Hardener = 85：15 (by weight.)	
Viscosity	180±20dPa.s (Cone-plate viscometer 5min⁻¹/25℃, After mixing)	
Solid content	81±3wt% (After mixing)	
Specific gravity	1.6±0.1 (After mixing)	
Tack dry window	75℃×50min(Max)	
Exposure energy	600-1000 mJ/cm² (Under Mylar film)	
	420-700mJ/cm² (On solder mask)	
Post cure	150℃×60min	
Pot life	24 Hrs. (stored at dark & lustration place, 25℃ or below)	

3. PROCESS CONDITIONS:

Process	Conditions	Tolerance
Test panels:	FR-4 (thickness 1.6mm)	-
Pretreatment:	Acid rinse → Buff scrubbing → Water rinse → Dry	-
Dilution volume:	100mesh	[90-125mesh]
Hold time:	10 min	[10-20 min]
Pre-cure:	Single side Coating	[75℃ 50 min]
	1st:75℃ 35-45 min (Hot air convection oven)	(Max)
	Double side Coating	
	1st:75℃ 15-20min (Hot air convection oven)	
	2nd:75℃ 20-25 min (Hot air convection oven)	
Exposure:	800mJ/cm^2 (Under Mylar film)	[600-1000mJ/cm^2]
	560mJ/cm^2 (On solder mask)	[420-700 mJ/cm^2]
	Halogen lamp 7kW (ORC HMW-680GW)	
Hold time:	10 min	[10-20 min]
Development:	Solution: 1wt% Na_2CO_3	-
	Temp.: 30℃	-
	Spray pressure: 0.196Mpa	[0.196-0.245Mpa]
	Time: 90 sec	[60-90 sec]
Water rinse:	Temp.: 25℃	[20-30 ℃]
	Spray pressure: 0.098Mpa	[0.098-0.147Mpa]
	Time: 45 sec	[45-60 sec]
Post cure:	150℃ 60 min (Hot air convection oven)	[150℃ 30-90 min]

*In case of applying marking ink, solder mask should be cured at 150deg.C for 30 minutes, then marking ink should be cured at 140deg.C/20min for each side of PCB.

4. ATTENTION ON PROCESS:

a) As to the operation environment, it is desirable to deal with the ink under the yellow lamps in the clean room which the temperature and the relative humidity is controlled at 20-25℃, 50-60% respectively. Please avoid using it under white fluorescent lamps or sunlight (directly or indirectly) because of the photopolymerization of the ink.

b) Please mix with specified amount of hardener when the ink cools down to the room temperature. If it is found that the separation of the ingredient, please stir up sufficiently.

c) If the main agent and the hardener could not be mixed sufficiently, will lead to inferior quality such as uneven gloss or poor solidification

d) The adequate thickness is 10-20 um (on the copper after curing). Thin coating possibly reduces its solder heat resistance. On the other hand, thick coating possibly causes the under-cut or low tackiness.

e) If you feel difficulty in printing due to high viscosity, please use dilution such as Diethylene Glycol Monoethyle Ether Acetate (Carbitol Acetate) and Reducer-J. The maximum of the dilution is controlled to 2wt% (20 cc dilution could be added at most per kilogram), otherwise would lead to the flowing of ink or the poor heat and gold-plated resistance.

f) Please test the production range according to the drying equipment, temperature and time of curing, production condition, kinds of dilution and requirements for quality.

g) Please test the production range according to the exposing equipment, exposing energy, development time, production condition and requirements for quality.

h) Please adjust the density and the temperature of developer, control the spray pressure and development time to avoid degradation of the developability according to the sheet.

i) Please set the post cure conditions considering the curing time and temperature of the ink. Insufficient curing or over curing may cause the degradation of properties. Besides that it is considered the marking ink curing may have bad influence on the solder resist.

j) Please confirm curing temperature and time first and then use. Because it may lead to oxidation of cuprum and discolor the ink while curing.

k) Please keep the essential properties, operational performance well and then use. If samples are altered, you should also pay more attention.

5. INK PROPERTIES:

5.1 TACK DRY WINDOWS:

Drying time (75℃)	40 min	45 min	50 min	55 min
Developability	OK	OK	OK	NG

5.2 PHOTO SENSITIVITY

Item	Thickness	Energy		Result
	um	mJ/cm^2 (under Mylar)	mJ/cm^2 (on S/M)	
Sensitivity Kodak No.2	22±2	600	420	7
		800	560	8
		1000	700	9

(90 sec development)

6. PROPERTIES:

Item	Teat Method	Result
Adhesion	Taiyo internal method Cross hatch peeling	100 / 100
Pencil hardness	Taiyo internal method No scratch on copper	6H
Solder heat resistance	Rosin flux 260℃/30sec，1cycles	Pass
Acid resistance	10vol% H_2SO_4 20℃/20min. (Dip) Tape peeling test	Pass
Alkaline resistance	10wt% NaOH 20℃/20min. (Dip) Tape peeling test	Pass
Solvent resistance	PGM-Ac 20℃/30min. (Dip) Tape peeling test	Pass
Insulation resistance	IPC comb type (B pattern) Humidification:25-65℃/90%RH/ DC100V 7Days Measurement:DC500V 1min.	Initial $1.0\times10^{13}\Omega$ Conditioned $3.0\times10^{12}\Omega$

Note: The above-mentioned data is based on lab test @TAIYO INK (SUZHOU), which is only for your reference, because every facility may provide different result.

7. Attention:

a) Please operate in accordance with SDS.

b) Operate in area supported by local exhaust or general room ventilation to avoid build-up of high concentration of solvent vapors.

c) Use gloves and apron during operation. Wash with soap and water if ink is attached to the skin.

d) Wash hands and face with soap and water. Rinse out the mouth before eating or smoking.